

WHAT IS CLAIMED IS:

1. A solenoid valve-equipped expansion valve in which an expansion valve for adiabatically expanding refrigerant and a stop valve for opening and closing a  
5 refrigerant passage are integrated with each other,

characterized by comprising:

a driving force-transmitting member inserted into a valve hole of the expansion valve in an urged state such that the driving force-transmitting member is always in  
10 abutment with a power element;

a common valve element commonly used by the expansion valve and the stop valve, the common valve element being disposed on an opposite side of the valve hole of the expansion valve to the power element, such  
15 that the common valve element is axially movable by being guided by the driving force-transmitting member;

a spring for urging the common valve element in a valve-closing direction with respect to the driving force-transmitting member; and

20 a solenoid for electromagnetically coupling the common valve element and the driving force-transmitting member with each other when the solenoid is energized, to thereby transmit displacement of the power element to the common valve element.

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2. The solenoid valve-equipped expansion valve according to claim 1, wherein the solenoid includes a

first core rigidly fixed to the driving force-transmitting member, a second core disposed such that the second core is movable along the driving force-transmitting member while holding the common valve element, and a solenoid  
5 coil for causing attraction of the first core and the second core to each other or releasing of the first core and the second core from each other, and wherein the spring is interposed between the first core and the second core.

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3. The solenoid valve-equipped expansion valve according to claim 1, wherein the driving force-transmitting member comprises at least one shaft, and wherein a seal member is provided between the shaft and  
15 the common valve element.

4. The solenoid valve-equipped expansion valve according to claim 1, wherein the driving force-transmitting member is formed by arranging, on the same  
20 axis, a first shaft having one end in abutment with the power element and another end guiding the common valve element, a second shaft urged toward the first shaft, and a valve element guide disposed between the first and second shafts such that the valve element guide axially  
25 movably guides the common valve element, the valve element guide having the same diameter as an inner diameter of the valve hole of the expansion valve, and wherein a seal

member is disposed between the valve element guide and the common valve element.

5        5.     The solenoid valve-equipped expansion valve  
according to claim 1, wherein the driving force-  
transmitting member is formed by arranging on the same  
axis, a first shaft having one end in abutment with the  
power element and another end guiding the common valve  
element, and a second shaft having the same diameter as an  
10 inner diameter of the valve hole of the expansion valve,  
and disposed such that the second shaft is urged toward  
the first shaft and axially movably guides the common  
valve element, and wherein a seal member is disposed  
between the second shaft and the common valve element.

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6.     The solenoid valve-equipped expansion valve  
according to claim 1, wherein a flexible valve sheet is  
provided on the common valve element or a valve seat on  
which the common valve element is seated, for completely  
20 stopping a flow of the refrigerant.

7.     The solenoid valve-equipped expansion valve  
according to claim 1, wherein a check valve for preventing  
a reverse flow of refrigerant is provided in a refrigerant  
25 passage for allowing refrigerant to pass therethrough so  
as to cause the power element to sense a temperature and  
pressure of the refrigerant.